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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/766,561      | 01/29/2004  | Asako Koike          | ASAM.0101           | 4049             |

7590 07/28/2006  
REED SMITH LLP  
3110 Fairview Park Drive, Suite 1400  
Falls Church, VA 22042

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| EXAMINER |
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PADMANABHAN, KAVITA

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| ART UNIT | PAPER NUMBER |
|----------|--------------|

2161

DATE MAILED: 07/28/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                                       |                                     |  |
|------------------------------|---------------------------------------|-------------------------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b><br>10/766,561  | <b>Applicant(s)</b><br>KOIKE ET AL. |  |
|                              | <b>Examiner</b><br>Kavita Padmanabhan | <b>Art Unit</b><br>2161             |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 29 January 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>1/29/04</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Status of Claims***

1. Claims 1-17 are pending.
2. Claims 1-17 are rejected.

### ***Priority***

3. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### ***Specification***

4. The abstract of the disclosure is objected to because of the following informalities:

It is suggested that the "1" be removed at line 9 of the abstract.

It is suggested that the phrase "provided with knowledge how" be rewritten in proper grammatical form.

Correction is required. See MPEP § 608.01(b).

5. The disclosure is objected to because it contains an embedded hyperlink and/or other form of browser-executable code at page 7, line 3 and page 13, line 9, for example. Applicant is required to delete the embedded hyperlink and/or other form of browser-executable code. See MPEP § 608.01.

### ***Claim Objections***

6. **Claims 1, 8, and 16** are objected to because of the following informalities:

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In regards to **claim 1**, it is suggested that the word “of” be removed after the word “screen” at line 14 of the claim and the phrase “having connected” be changed to --connecting-- at line 15. **Claim 16** contains similar limitations.

In regards to **claim 8**, it is suggested that “network between terms” be changed to --network of terms-- at line 3.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

7. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

8. **Claims 13-15** are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. With respect to **claim 13**, “a lod score” is not described sufficiently in the applicant’s specification. With respect to **claims 14 and 15**, “gene clustering” is not described sufficiently in the applicant’s specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

9. **Claims 14-15** rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that

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the inventor(s), at the time the application was filed, had possession of the claimed invention.

“Gene clustering” is not described sufficiently in the applicant’s specification.

10. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

11. **Claims 1-17** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

**Claim 1** recites the limitation “storing a degree of association between terms belonging to a third category.” It is unclear to the examiner what is intended to belong to a third category (for example, the degree of association or the terms). For the purposes of examination, the examiner is assuming that the applicant is intending to claim that the terms belong to a third category. **Claim 16** contains a similar limitation.

**Claim 1** recites the limitation “terms belonging to a third category containing the first category and the second category.” It is unclear to the examiner what is intended to contain the first category and the second category (for example, are the terms intended to include terms from the first category and terms from the second category, or is the third category intended to contain both the first and the second categories, and if so, how?). For the purposes of examination, the examiner is assuming that the terms belonging to a third category are intended to include terms from the first category and terms from the second category. **Claim 16** contains a similar limitation.

**Claim 1** recites the limitation “storing a degree of association between terms belonging to a third category ... in the form of a plurality of sets of tables.” It is unclear to the examiner

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what is intended to be in the form of a plurality of sets of tables (for example, is the degree of association between terms intended to be in the form of tables or are the terms belonging to the third category intended to contain the first category and the second category in the form of tables?). For the purposes of examination, the examiner is assuming that the degree of association between terms is intended to be in tabular form. **Claim 16** contains a similar limitation.

**Claim 1** recites the limitation "the table" in line 12 of the claim. There is insufficient antecedent basis for this limitation in the claim.

**Claim 4** recites the limitation "wherein one of said first query and said second query is plural." It is unclear to the examiner what is meant by this limitation.

**Claim 8** recites the limitation "said third input unit" in lines 4-5 of the claim. There is insufficient antecedent basis for this limitation in the claim.

**Claim 9** recites the limitation "said third input unit" in lines 5-6 of the claim. There is insufficient antecedent basis for this limitation in the claim.

**Claim 11** recites the limitation "the association between said terms is displayed on the screen at the same time." It is unclear to the examiner what the association is intended to be displayed at the same time as.

**Claim 12** recites the limitation "said term" twice in line 3 of the claim. There is insufficient antecedent basis for this limitation in the claim.

**Claim 13** recites the limitation "a lod score" in line 5 of the claim. It is unclear to the examiner what is meant by this limitation.

**Claim 14** recites the limitation "the result of gene clustering" in line 3 of the claim.

There is insufficient antecedent basis for this limitation in the claim.

**Claim 14** recites the limitation "the gene clustering" in line 4 of the claim. There is insufficient antecedent basis for this limitation in the claim.

**Claim 15** recites the limitation "when a result of displaying the network does not match with a result of the gene clustering." It is unclear to the examiner what is intended by this limitation and how a result of displaying a network could be determined to not match a result of gene clustering.

The examiner will apply prior art to this claim as best understood in light of the above rejection.

### ***Claim Rejections - 35 USC § 102***

12. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

13. **Claims 1-5, 7-9, 11, and 16-17** are rejected under 35 U.S.C. 102(b) as being anticipated by **Miller et al.** (US 2002/0091678, hereinafter "Miller").

In regards to **claim 1**, **Miller** teaches a network drawing system, comprising:

- a first input unit designating a first query belonging to a first category (**Miller; par [0052]**);

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- a second input unit designating a second query belonging to a second category (**Miller; par [0052]**);
- a data storage device storing a degree of association between terms belonging to a third category containing the first category and the second category in the form of a plurality of sets of tables (**Miller; par [0045], lines 8-12; par [0054], lines 10-12**);
- a calculation device which associates the input first query and second query through a plurality of terms, using the table stored in said data storage device (**Miller; par [0055]**);  
and
- a display device displaying on a screen of a network of terms having connected the first query and the second query through the plurality of terms based on a result of calculation made by said calculation device (**Miller; par [0056], Figs. 3 and 4**).

In regards to **claim 2**, **Miller** teaches the network drawing system according to claim 1, further comprising

- a third input unit for designating a drawing condition (**Miller; par [0043]; Fig. 7, steps S12, S13, S15**); and
- said network being displayed according to said drawing condition (**Miller; par [0043]; Fig. 4**).

In regards to **claim 3**, **Miller** teaches the network drawing system according to claim 1, wherein said data storage device further stores attributes of said terms (**Miller; pars [0031]-[0032], pars [0061] - [0062]**).



In regards to **claim 4**, **Miller** teaches the network drawing system according to claim 1, wherein at least one of said first query and said second query is plural (**Miller; par [0032], lines 1-5**).

In regards to **claim 5**, **Miller** teaches the network drawing system according to claim 1, wherein among routes connecting said first query and said second query, a route having the highest degree of association between the terms is displayed by a highlight line (**Miller; Figs. 3, 4, and 6**).

In regards to **claim 7**, **Miller** teaches the network drawing system according to claim 1, wherein the association between said terms is extracted according to co-occurrence between terms or phrase patterns (**Miller; par [0031], lines 1-6; par [0032], lines 5-8; par [0045], lines 6-12**).

In regards to **claim 8**, **Miller** teaches the network drawing system according to claim 1, wherein the network between terms is re-displayed interactively by changing the setting of said third input unit (**Miller; par [0043]; par [0047]; par [0059]; Fig. 7, steps S12, S13, S15**).

In regards to **claim 9**, **Miller** teaches the network drawing system according to claim 1, wherein the connection between terms or editing for addition or deletion of a term itself can be

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conducted interactively by changing the setting of said third input unit (**Miller; par [0043]; par [0047]; Fig. 7, steps S12, S13, S15).**

In regards to **claim 11**, **Miller** teaches the network drawing system according to claim 1, wherein the association between said terms is displayed on the screen at the same time (**Miller; Figs. 3, 4, and 6).**

**Claim 16** is rejected with the same rationale given for claim 1.

In regards to **claim 17**, **Miller** teaches the network drawing method according to claim 16, comprising connecting to said data storage device through an Internet (**Miller; par [0026]; Fig. 2).**

### ***Claim Rejections - 35 USC § 103***

14. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

15. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out

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the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

16. **Claim 10** is rejected under 35 U.S.C. 103(a) as being unpatentable over **Miller in view of Murray et al.** (US 6,876,930, hereinafter “Murray”).

In regards to **claim 10**, **Miller** teaches the network drawing system according to claim 1. **Miller** does not expressly teach a synonym dictionary for converting at least one query input through said first input unit or said second input unit into a standardized term. **Murray** teaches querying a database to identify synonyms for genes that are being queried and then proceeding with the search based on the input gene and its identified synonyms (**Fig. 10, steps 300-320**). It would have been obvious to one of ordinary skill in the art at the time of the applicant’s invention to implement the system of **Miller** by using a synonym dictionary to convert an input term into its synonyms, such as that taught by **Murray**, in order to be able to more accurately depict relationships between terms by using both the input term and its identified synonyms (**Murray; col. 28, lines 1-6**).

17. **Claims 6 and 12-15** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Miller in view of Chamberlin et al.** (US 6,941,317, hereinafter “Chamberlin”).

In regards to **claim 6**, **Miller** teaches the network drawing system according to claim 1. **Miller** does not expressly teach said first category being at least one of a disease name, a

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symptom, a protein name, a gene name, a compound name, a gene function and a protein's function; and said second category being at least one of the compound name, the protein name and the gene name. **Chamberlin** teaches entering queries wherein the keywords are amino acid sequences, gene names, etc. (**Chamberlin; col. 15, line 52 – col. 16, line 28**), in order to perform searches, browse sequences, and examine and display relationships between genes (**Chamberlin; col. 14, lines 9-19**). It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to implement the system of Miller using the biological queries of Chamberlin in order to be able to query databases containing biological data and display relationships between such data (**Chamberlin; col. 1, lines 25-32; col. 14, lines 9-19**).

In regards to **claim 12**, **Miller** teaches the network drawing system according to claim 1. **Miller** does not expressly teach when said term has a hierarchy, said term being displayed hierarchically. **Chamberlin** teaches displaying items in a hierarchical tree (**Chamberlin; Fig. 15**). It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to implement the system of Miller using the hierarchical display feature of Chamberlin, whereby if terms have a hierarchical relationship, the system of Miller would indicate the hierarchy in the graphical representation of the network in order to display relationships between biological data (**Chamberlin; col. 1, lines 25-32; col. 14, lines 9-19**).

In regards to **claim 13**, **Miller** teaches the network drawing system according to claim 1. **Miller** also teaches displaying information associated with a term on the display (**Miller; par [0045], line 1 – par [0046], line 5; par [0061] – par [0062]**). **Miller** does not expressly teach

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said second category being a gene name, and said gene name being displayed along a horizontal axis of said screen, and a lod score being displayed for each gene of the horizontal axis or together with information on a chromosome position. **Chamberlin** teaches entering queries wherein the keywords are amino acid sequences, gene names, etc. (**Chamberlin; col. 15, line 52 – col. 16, line 28**), a display depicting relationships between sequences (**Chamberlin; Fig. 15**), and displaying a “log odds score” (**Chamberlin; Fig. 11; col. 16, lines 4-10**). It would have been obvious to one of ordinary skill in the art at the time of the applicant’s invention to implement the system of Miller with the biological data of Chamberlin, whereby the second query term is of the gene name category, and the gene name and log odds score information is displayed with the graphical representation of the network in order to display information about and relationships between biological data (**Chamberlin; col. 1, lines 25-32; col. 14, lines 9-19**).

In regards to **claim 14**, **Miller** teaches the network drawing system according to claim 1. **Miller** does not expressly teach the association between said terms being displayed together with the result of gene clustering. **Chamberlin** teaches displaying the relationships between genes and protein sequences and also teaches displaying families of sequences (**Chamberlin; Fig. 11; Fig. 15**), which constitutes clustering or grouping. It would have been obvious to one of ordinary skill in the art at the time of the applicant’s invention to implement the system of **Miller** using the display feature of **Chamberlin**, whereby association between terms would take into account familial and evolutionary relatedness, in order to display relationships between biological data (**Chamberlin; col. 1, lines 25-32; col. 14, lines 9-19**).

In regards to **claim 15**, **Miller** teaches the network drawing system according to claim 1. **Miller** also teaches highlighting a route connecting different items, i.e. terms that do not match with each other (**Miller**; **Fig. 4**, **Fig. 6**). **Miller** does not expressly teach when a result of displaying the network does not match with a result of the gene clustering, a route connecting the first query and the second query which do not match with each other is displayed by a highlight line. **Chamberlin** teaches displaying the relationships between genes and protein sequences and also teaches displaying families of sequences (**Chamberlin**; **Fig. 11**; **Fig. 15**), which constitutes clustering or grouping. It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to implement the system of **Miller** using the biological data of **Chamberlin**, whereby when there is not an exact match found, a nearest match could be highlighted on the display to indicate relationships between biological data (**Miller**, par [0049]; **Chamberlin**, col. 1, lines 25-32, col. 14, lines 9-19).

### *Conclusion*

18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Kavita Padmanabhan** whose telephone number is 571-272-8352. The examiner can normally be reached on Monday-Friday, 9:00am-5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jeffrey Gaffin can be reached on 571-272-4146. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Kavita Padmanabhan  
Assistant Examiner  
AU 2161

July 24, 2006

*pl.*  
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**UYEN LE**  
**PRIMARY EXAMINER**